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Introducing Web-based Learning:
An Investigation into its Impact on University Lecturers and their Pedagogy

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Abstract

There has been major investment in Virtual Learning Environments (VLEs) and Managed Learning Environments (MLEs) for organizing web based learning in universities and other higher education institutions across the world in recent years. Some of these VLEs and MLEs have been developed using proprietary software to create the learning environment (e.g. Blackboard™, or WebCT ™) while others have been developed in-house using local expertise with requirements tailored specifically to that local environment. While there may be clearly identifiable benefits to students to access their course materials through e-learning software, there is also an obvious impact on their teachers. Academics may have found themselves required for the first time to engage with the new technologies of on-line learning. This investigation considers the impact that the introduction of an MLE has had on lecturers and their pedagogy in an English university and explores those aspects of training and support that have proved most beneficial.

Introduction

In September 2001 the University of Hertfordshire introduced its managed learning environment (StudyNet) for the benefit of students and academic staff. The general aim of this and other similar software applications is to provide an asynchronous mode of access to learning materials for students at any time of day or night both during term time and throughout the vacation, from the campus environment as well as remotely from their home, thus allowing students '24/7' access to learning resources. The development and implementation of the new technology has raised a number of questions in this university as well as others regarding the introduction of web-based learning for existing academic staff. Questions raised include 'How much does it assist and benefit the academic staff (from both technical and non-technical backgrounds) who are then required to use the technology, regardless of their skill base?' and 'What training and support should be provided for academic staff within their faculties?' These were the starting point for a major study into the use of and attitudes towards the new MLE but before tackling these in detail there is, first an introduction to the suggested benefits of e-learning.

Introducing e-learning to enhance the teacher's role

In setting out a framework for implementing successful e-learning amongst academics and encouraging them to embrace the new technologies involved, a brief study of some of the opinions can set the scene. There are multiple claims about e-learning enhancing teaching and the teacher's role (for example, Britain and Liber, (1999)). The authors would cite Littlejohn and Higginson (2003) who claim the following benefits for e-learning:

- Reduced administrative load because routine information is available on-line
- Easier communication with individuals and groups of students
- A wider range of available resources
- Reduced assessment load
- It motivates and supports students with little extra teacher time
- Releases time for more interactive forms of teaching
- Easier to amend and update materials
- Contributes to quality assurance audits

Anecdotal opinions led the authors to believe that academics in their own institution were less welcoming to the imposition of web-based learning and perceived it as a potential threat to their previous practice, with a major learning-curve to be surmounted before successful assimilation into their classroom practice. Thus, the authors were more inclined to agree with Conole (2002:9-10), when in her review of the 'learning technology landscape' she states,

'… although VLEs can be used to significant effect… this is not an inherent property of the technologies themselves.'

While large scale and longitudinal research projects are much needed (eg the SOLE project from ILRT, Bristol, UK in 2003), they are difficult to set up and fund. As a result the extant literature is full of examples of small-scale studies, often based in single institutions. While not ideal, this body of knowledge is growing and, taken together such studies may begin to provide answers to the question as to whether e-learning can enhance the quality of the learning process for university level students.

The initial development of the MLE at Hertfordshire

The University of Hertfordshire's initiative, StudyNet, was developed in-house using Lotus Notes software by a team of software developers at the university. From the start it was seen as important to involve the academics in the design stage so that the final design embodied their views and opinions as far as possible in the use of the technology. Accordingly the development team incorporated the views of representatives from each of the university's seven faculties demonstrating its concordance with Laurillard's view:

'… it has to be possible for academics to be close to the design of e-learning, to be engaged in exploring and developing its capabilities, and to be collaborating to build a progressive body of knowledge.' Laurillard (2002)

StudyNet was designed to provide a virtual learning space where teaching and learning activities could be accommodated in a managed environment. The notion of management is important since it is this that characterizes the system as an MLE rather than a VLE. Data regarding student admissions and their choice of courses is passed directly to StudyNet from the university's own information management system. Academic staff have the facility to upload material for students to access into individual course areas. This can lead to a variety of student interactivity with the material. Students can take part in on-line discussions, submit assignments, and follow links suggested by the teaching staff to web pages and journal articles. There is a direct link to their university email and the library system, all from within the MLE framework.

Initial early evaluation with students in the summer of 2001 gave positive feedback and a significant pilot scheme was set in place to run throughout the following academic year. This encouraged the use of the MLE particularly with Level 1 and Masters level students. From the start of the following academic year in September 2002, the MLE was fully on-line for over 20,000 students and academic staff providing personalized portals to access course and program details.

Introducing the MLE to the university environment

Throughout the initial development time and the subsequent roll-out of the final product the enhancement of learning and teaching quality has remained of central importance for the StudyNet development team. A continuing program of training and support was introduced prior to the start of the pilot scheme, to ease the university's academic and support community into using StudyNet. This was further enhanced by the introduction of Faculty and Departmental Champions, members of the academic staff who were willing to encourage the use of StudyNet. These 'early adopters' (a phrase coined by Johnson and McCormack, 1996) were keen to provide a local support network for other staff users.

From January 2003 the University of Hertfordshire funded and commissioned a major internal research project to identify the effects on pedagogy of the introduction of StudyNet and to investigate the staff perception of the quality of the training and support they had received both initially and on an ongoing basis. At that point the take up and the nature of the use of StudyNet for pedagogical purposes was variable across faculty staff and students. The research sought to identify the different staff attitudes to using the MLE within different faculties and particularly whether the anecdotal concerns over a perceived increase in workload were true.

The stated aims of this research were to assess
- The extent of StudyNet embeddedness within the university 'culture',
- The uses to which it was put within this particular academic environment,
- Its impact on staff working practices and pedagogy.

Additionally the researchers were interested in issues of access and equity for staff and students and whether there was a specific focus to problems and concerns that were raised, which would be clearer through a cross institutional study. Above all, the study sought to identify emerging good practice in the use of an MLE, which could be transferred between departments and faculties, in line with Laurillard's comments on successful e-learning. (Laurillard, 2002)

'…for e-learning to be successful, academics need to remain close to the capabilities of the media, as they must design the learning experience to help students engage with the knowledge and skills they are teaching.'

Methodology and Results

In order to include the opinions of as many academic staff as possible, all contracted academic staff were sent a questionnaire and invited to submit their opinions and also to volunteer for interview at a later date. The return rate of the questionnaires was 40% from a sample of 716 and the majority of those returning the forms were users of Studynet (91%). Follow up interviews were subsequently held with 29 members of staff, comprising 14 users of Studynet, 7 non-users and 8 of the Faculty or Department champions. It was important to the research team to identify why Studynet was not being used by colleagues, so the decision was taken to interview a higher proportion of non-users than the rate of return of the questionnaires would have suggested.

The Importance to Academics of Initial Training and On-going Support

The initial provision of training and support had been identified as essential to encouraging all staff, and particularly those from the traditionally non-technical faculties, to embrace the changing teaching environment. The value of the training was confirmed in the findings, with 83% of those returning the questionnaires and describing themselves as StudyNet users, finding the initial training useful. There was also a positive response to the informal training and support provided by faculty colleagues (81%) and the Faculty and Department Champions (70%). On the whole the training sessions were viewed positively (87% of respondents had attended) and positive comments included:

"fantastically useful … We walked out of the room buzzing with how exciting it was"; "useful" ; "helped a bit".

Alongside the training sessions the following additional methods of support had been offered to academic staff:

- a user's handbook,
- an on-line website
- on-line tutorials.

However, when given the choice staff preferred to use 'human' rather than text or textual support when using StudyNet. The training sessions, the Faculty Champions and helpful colleagues were definitely preferred (by over 70% of respondents) as a means of support, to hard copy or electronic guides.

Most staff recorded that they needed time after the training courses to explore StudyNet further. Time was a recurrent theme, and was linked to issues of workload both for staff and students, as has been noted by Haywood, Anderson et al (J.Haywood, C.Anderson et al , 2000).

How do Technical and Non-technical academics make use of the MLE?

Differences between Faculties were highlighted by the use made of the various facilities available on the MLE. All Faculties had a high proportion of users, with the Law School being the most innovative, beyond even the Science and Engineering based courses. Whilst this might initially appear surprising, two obvious reasons emerged for this. Firstly, this was due to the exceptionally high level of personal support provided in the Law Faculty with a permanent member of staff being seconded to provide direction to colleagues. Secondly, the more technically literate academic staff in the Engineering and Science based faculties had generally developed their own course websites already, prior to the introduction of StudyNet as an MLE and continued to use these in the early stages of the StudyNet development.

The limitations of an electronic medium to support the academics teaching Fine Art and Multidimensional Design had led to a more limited initial take up in that faculty and additional problems for students in practical healthcare subjects such as nursing were identified by academics, for example students were frequently assigned to placements in working environments, without access to the Internet.

The most popular facilities amongst academic staff for providing teaching and learning information for students were the Module Information, Teaching Materials and Module news facilities. All of these were rated as useful by 87% or more users, with over 94% of those using the Teaching Materials, finding it useful.

Student attendance, which had been mooted as likely to fall if students had easy access to on-line material in advance, had not in fact become the problem that staff had originally anticipated when asked anecdotally. It has been noted elsewhere in Higher Education circles that poor attendance by students is perceived as an increasing problem, but this cannot all be attributed to advances in technology.

'However, it is evident …that courses not using PowerPoint™ have suffered similar declines in attendance to those that do use it, that the problem is not specific to the technology. It is much more closely related to the quality of lectures in general and more general difficulties encountered by the student population such as having to undertake paid term-time employments."(Jones et al, 2003)

Staff quoted instances where the students had demonstrated greater diligence in preparing for their classes in advance due to the ease of accessing material via Studynet. This was in line with the study undertaken by Saunders and Klemming (2003), at the University of Westminster, where students reported.

'the availability of on-line materials helped with developing an overview of the timetabled classes and this increased(d) their chances of understanding a topic in class.'

The Impact on pedagogy of the introduction of an MLE

While Studynet was being evaluated at a relatively early stage in its use and development, there is

some evidence to suggest that following its introduction it is making inroads into existing pedagogical practice, particularly in the areas of: -

- • On-line discussion,
- • Assignment submission
- • Formative assessment

On-line discussion had been promoted early on as one of the main benefits of using an MLE. Students would be able to continue their discussions out of the classroom, going on-line at any time and the academics could join in or watch or view the proceedings when they wished. The asynchronous nature of the MLE meant that all could participate, even at a later stage and see where the discussion had led. There was the option for staff to add Frequently Asked Questions to the discussions from their own email. Some courses used this facility successfully, but many others complained at the lack of interest from the students. On-line discussion and the best way to encourage and direct it has been the subject of other studies (e.g. Hilz and Wellmann, 2003) and lessons still need to be learnt to identify best practice. Successive studies have not yet produced conclusive evidence one way or the other, for the best way to support and encourage on-line discussions.

Using Studynet for the on-line submission of assignments and the subsequent provision for plagiarism detection facilities has proved popular in some faculties but has yet to be taken up by the majority. Lack of trust and lack of time to try the mechanism were cited by some as their reasons for not using it, while it was anticipated as being useful for the future.

Several good examples of academic colleagues using the MLE for formative assessment, were identified during the interview stage. These included developing quizzes and multiple-choice questionnaires. Students were reportedly keen to use these as a means of testing themselves prior to a summative assessment.

Lessons learnt from the introduction of an MLE

The majority of staff viewed the MLE as an administrative, communication and information-giving tool. This tied in with Conole's opinions at the time regarding the evolution of learning technology (Conole, 2002). Most teaching continues to be carried out 'face to face' in lectures and seminars and yet with the added benefit of the MLE to enable students access out of class time. Academic staff were on the whole enthusiastic about StudyNet because:

- • 'It is an extra teaching resource that 'they can drop in and out (of)'
- • 'It is a useful repository with everything in one place'
- • 'With larger and larger classes it enhances communication and information with students'.

As classes of attending students increase, extra support can be offered via the Course Discussion pages with all the relevant material on-line. Human support was highly valued at the formal initial training stage and especially by the less-technically competent and those with little time to get on-board fast. Where this human support was seen as supportive and enthusiastic and was based in the Faculty or Department with local knowledge of the curriculum and staff, it was valued by colleagues who would make frequent informal contact.

Conclusion

While there was a generally positive reaction to the introduction of new technology, the pace of change was still seen to be too fast by some academics. Pedagogy has been changing slowly to take advantage of the new technologies and is becoming more experimental and creative, while not yet at the stage envisaged by David Squires in his futuristic anticipation of academics existing as 'peripatetic electronic teachers' with 'multiple telepresences' (Squires, 1999). On a local note it can be demonstrated that where much effort has been put into providing initial and continuing training this has repaid the efforts and been widely appreciated. Concerns over the increase to staff workload are significant but many non-technical academic staff have grown in confidence with the technology and are now beginning to experiment and use ICT in innovative ways. Anecdotally, students have been enthusiastic adopters of the system, appreciating that it offers a far more flexible approach to their learning, and this in turn has encouraged staff to make wider use of StudyNet with all its facilities.

MLEs are undoubtedly here to stay within the higher education landscape, within the UK in the post-Dearing era. Thus it is important to identify the best ways to encourage their use and to provide training and support at the right level for all academic staff across the institution.

Acknowledgements

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